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10/072,971	02/12/2002	John M. Harris	8818.001.00	3501

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EXAMINER
VAN DOREN, BETH

ART UNIT	PAPER NUMBER
3623	

DATE MAILED: 06/02/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)
	10/072,971	HARRIS, JOHN M.
	Examiner	Art Unit
	Beth Van Doren	3623

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *12 February 2002* .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-11* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-11* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

1. The following is a non-final, first office action on the merits. Claims 1-11 are pending.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claims 2 and 5 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

4. Claim 2 recites the limitation "wherein using the selected model of the probability of unscheduled component demand as a function of time to calculate *a time period until* unscheduled component demand is expected to occur comprises calculating a *time period* when the probability of the next unscheduled component demand event equals 1-α". This limitation does not contain the same wording as the limitation it references in claim 1, and therefore there is insufficient antecedent basis for the term "a time period" in claim 2. Claim 2 should more appropriately recite "to calculate --the time intervals at which-- unscheduled component demand is expected to occur comprises calculating --time intervals--. Appropriate correction is required.

Furthermore, it is unclear in claim 2 as to what the variable α represents. In claim 1, α is used to represent a desired serviceable component availability rate. Claim 2 recites that 1-α is the probability of the next unscheduled component demand. Based on the broadest reasonable interpretation of the variable α as an availability rate in claim 1, it is unclear how 1-α is then supposed to represent the probability of component demand. It appears a step may be missing in

this conversion since the α of claim 1 is a rate, which is a unit per time, and in claim 2 α appears to be a percentage representing a probability, which would not be a unit per time. For examination purposes, the α of claim 1 and the α of claim 2 are considered to be generic variables and unrelated to each other. Clarification is required.

5. Claim 5 recites the limitation "further comprising eliminating insignificant variables and variables that cause multicollinearity from each of the established models". Based on the recitation, it is unclear at what point this step is occurring in the method and how the step is being implemented (i.e. is each of the models being implemented with the historical data, the variables removed, and then one is chosen, **or** are variables removed, the models implemented with historical data, and one is chosen, **or** is a model chosen, implemented with historical data, and the variables removed, etc.).

Furthermore, there is insufficient antecedent basis in claims 1 and/or 5 for the term "variables". Since there are no specific models present in claims 1 and/or 5, it is unclear if the variables are the historical data or some other variables present in the models.

Clarification is required in all instances.

Claim Rejections - 35 USC § 102

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1-2 and 7 are rejected under 35 U.S.C. 102(e) as being anticipated by Willemain et al. (U.S. 6,205,431).

7. As per claim 1, Willemain et al. teaches a method of determining time intervals at which unscheduled demand for the components is expected to occur, comprising:

establishing a set of statistical models for a probability of unscheduled component demand as a function of time (See at least figures 2 and 6, column 1, lines 10-25 and 35-45, column 4, lines 15-17, 22-43, and 51-55, column 5, lines 10-20, column 6, lines 45-47, column 7, lines 1-3 and 12-15, column 8, lines 18-26, column 9, line 7, and column 11, lines 35-40, wherein a set of statistical models are established for determining the probability of component demand at a specific time in the future when the demand is not prearranged);

for each component, collecting historical unscheduled component demand data (See at least figures 2 and 3, column 1, lines 35-45, column 3, lines 2-7, column 4, lines 23-29, column 5, lines 10-20, column 6, lines 45-47, and column 7, lines 1-3, wherein historical unscheduled component demand is collected for the component);

for each component, using the collected historical unscheduled component demand data to select among the plurality of models one model of the probability of unscheduled component demand as a function of time (See at least figures 5 and 6, column 1, lines 10-25 and 35-45, column 4, lines 15-17, 22-43, and 51-55, column 5, lines 10-20, column 6, lines 45-47, column 7, lines 1-3 and 12-15, column 8, lines 18-26, column 9, line 7, and column 11, lines 35-40, wherein one of the methodology models is applied based upon the situation);

for each component, selecting a desired serviceable component availability rate, α (See at least column 4, lines 63-67, column 5, lines 1-9, and column 7, lines 57-65, wherein the service level availability rate is discussed); and

using the selected model of the probability of unscheduled component demand as a function of time for each component to calculate the time intervals at which the unscheduled component demand is expected to occur (See at least figures 2, 3, and 5, abstract, column 2, lines 66-67, column 3, lines 1-11 and 36-42, column 4, lines 15-32, column 5, lines 25-28, column 6, lines 45-65, column 7, lines 1-5 and 40-48, wherein the model is used to forecast the probable demand for unscheduled component demand as a function of time and what intervals (lead time numbers) that demand will occur).

8. As per claim 2, Willemain et al. teaches a method wherein using the selected model of the probability of unscheduled component demand as a function of time to calculate a time period until unscheduled component demand is expected to occur comprises calculating a time period when the probability of the next unscheduled component demand event equals 1-α (See column 1, lines 60-67, column 2, lines 1-4, column 7, lines 35-48, column 9, lines 25-35, column 11, lines 35-50, column 12, lines 37-50, column 14, lines 30-42, wherein the probability of the next unscheduled component demand is determined equal to 1-α).

9. As per claim 7, Willemain et al. teaches a method of forecasting unscheduled demand for a plurality of different components, comprising:

establishing a set of statistical models for modeling unscheduled demand for the components (See at least figures 2 and 6, column 1, lines 10-25 and 35-45, column 4, lines 15-17, 22-43, and 51-55, column 5, lines 10-20, column 6, lines 45-47, column 7, lines 1-3 and 12-

15, column 8, lines 18-26, column 9, line 7, and column 11, lines 35-40, wherein a set of statistical models are established for determining the probability of component demand at a specific time in the future when the demand is not prearranged);

for each component, selecting one of the statistical models for a probability of unscheduled component demand (See at least figures 5 and 6, column 1, lines 10-25 and 35-45, column 4, lines 15-17, 22-43, and 51-55, column 5, lines 10-20, column 6, lines 45-47, column 7, lines 1-3 and 12-15, column 8, lines 18-26, column 9, line 7, and column 11, lines 35-40, wherein one of the methodology models is applied based upon the situation); and

for each component, determining a date at which a cumulative probability of unscheduled component demand reaches a predetermined threshold (See at least figures 2, 3, and 5, abstract, column 2, lines 66-67, column 3, lines 1-11 and 36-42, column 4, lines 15-32 and 42-62, column 5, lines 25-28, column 6, lines 45-65, column 7, lines 1-5 and 40-48, a date is determined at which the probable unscheduled component demand reaches a predetermined threshold level).

Claim Rejections - 35 USC § 103

10. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 3-6 and 8-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Willemain et al. (U.S. 6,205,431).

11. As per claim 3, Willemain et al. teaches a method wherein each statistical model comprises a statistical distribution (See at least figures 2 and 6, column 1, lines 10-25 and 35-45, column 4, lines 15-17, 22-43, and 51-55, column 5, lines 10-20, column 6, lines 45-47, column 7, lines 1-3 and 12-15, column 8, lines 18-26, column 9, line 7, and column 11, lines 35-40, wherein statistical models and distributions are used). However, Willemain et al. does not expressly disclose that this statistical distribution is a Poisson distribution.

The Poisson distribution is a well-known statistical formula used to model the number of events for a specific time period. Willemain et al. discloses using various statistical models to forecast demand at temporal intervals in the future. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to use the Poisson distribution as the statistical model in order to increase a user's ability to balance the stock on hand versus the cost for maintaining the stock by more accurately predicting the amount of demand (events) for a specific time period, a stated in column 4, lines 30-40.

12. As per claim 4, Willemain et al. teaches selecting the statistical models (See at least figures 5 and 6, column 1, lines 10-25 and 35-45, column 4, lines 15-17, 22-43, and 51-55, column 5, lines 10-20, column 6, lines 45-47, column 7, lines 1-3 and 12-15, column 8, lines 18-26, column 9, line 7, and column 11, lines 35-40, wherein one of the statistical; models is applied based upon the situation). However, Willemain et al. does not expressly disclose selecting a set of equations for λ.

It is well known that a parameter or equation is substituted for lambda when using a Poisson distribution. The claims provide for no specific equation or equations for lambda, just that a set of equations is selected. Therefore, it would have been obvious to one of ordinary skill

in the art at the time of the invention to select a set of equations for lambda in order to more accurately model the demand-forecasting situation by providing the one parameter needed to complete the Poisson distribution.

13. As per claim 5, Willemain et al. teaches a method using statistical models including at least parametric models (See at least figures 2 and 6, column 1, lines 10-25 and 35-45, column 4, lines 15-17, 22-43, and 51-55, column 5, lines 10-20, column 6, lines 45-47, column 7, lines 1-3 and 12-15, column 8, lines 18-26, column 9, line 7, and column 11, lines 35-40, and column 12, linwa 20-35, wherein statistical models are used). However, Willemain et al. does not expressly disclose eliminating insignificant variables and variables that cause multicollinearity from each of the established models.

It is well known in statistics to detect and remove variables that are found to be insignificant or cause multicollinearity in models. The claims do not provide the specific models or variables and provide no specific process or reason for the removal of the variables, just that the removal occurs. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to remove variables that are insignificant and variables that cause multicollinearity in order to decrease the likelihood of errors in the model by removing the variables that statistically cause these errors to occur. This effect is well known in the art of statistics.

14. As per claim 6, Willemain et al. teaches a method wherein each statistical model comprises a statistical distribution (See at least figures 2 and 6, column 1, lines 10-25 and 35-45, column 4, lines 15-17, 22-43, and 51-55, column 5, lines 10-20, column 6, lines 45-47, column 7, lines 1-3 and 12-15, column 8, lines 18-26, column 9, line 7, and column 11, lines 35-40,

wherein statistical models and distributions are used). However, Willemain et al. does not expressly disclose that this statistical distribution is a Poisson distribution.

The Poisson distribution is a well-known statistical formula used to model the number of events for a specific time period. Willemain et al. discloses using various statistical models to forecast demand at temporal intervals in the future. Therefore, it would have been obvious oto one of ordinary skill in the art at the time of the invention to use the Poisson distribution as the statistical model in order to increase a user's ability to balance the stock on hand versus the cost for maintaining the stock by more accurately predicting the amount of demand (events) for a specific time period, a stated in column 4, lines 30-40.

15. As per claim 8, Willemain et al. teaches a method wherein each statistical model comprises a statistical distribution (See at least figures 2 and 6, column 1, lines 10-25 and 35-45, column 4, lines 15-17, 22-43, and 51-55, column 5, lines 10-20, column 6, lines 45-47, column 7, lines 1-3 and 12-15, column 8, lines 18-26, column 9, line 7, and column 11, lines 35-40, wherein statistical models and distributions are used). Willemain et al. further discloses using Markovian models and Parametric Models (See at least column 9, lines 24-36, and column 12, lines 25-35). However, Willemain et al. does not expressly disclose that this statistical distribution is a N-Erlang distribution.

The Erlang (or N-Erlang) distribution is a well-known statistical distribution used in queuing theory to model the number of events expected to arrive or occur at a specific time period. Willemain et al. discloses using various statistical models to forecast demand events (or arrival of demand) at temporal intervals in the future. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to use the N-Erlang distribution as the

model in order to increase a user's ability to balance the stock on hand versus the cost for maintaining the stock by more accurately predicting the amount of demand for a specific time period, a stated in column 4, lines 30-40.

16. As per claim 9, Willemain et al. teaches selecting the statistical models (See at least figures 5 and 6, column 1, lines 10-25 and 35-45, column 4, lines 15-17, 22-43, and 51-55, column 5, lines 10-20, column 6, lines 45-47, column 7, lines 1-3 and 12-15, column 8, lines 18-26, column 9, line 7, and column 11, lines 35-40, wherein one of the statistica; models is applied based upon the situation). However, Willemain et al. does not expressly disclose selecting a set of equations for λ.

It is well known that a parameter or equation is substituted for lambda when using a Poisson distribution. The claims provide for no specific equation or equations for lambda, just that a set of equations is selected. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to select a set of equations for lambda in order to more accurately model the demand-forecasting situation by providing the one parameter needed to complete the Poisson distribution.

17. As per claim 10, Willemain et al. teaches a method wherein each statistical model comprises a statistical distribution (See at least figures 2 and 6, column 1, lines 10-25 and 35-45, column 4, lines 15-17, 22-43, and 51-55, column 5, lines 10-20, column 6, lines 45-47, column 7, lines 1-3 and 12-15, column 8, lines 18-26, column 9, line 7, and column 11, lines 35-40, wherein statistical models and distributions are used). However, Willemain et al. does not expressly disclose that this statistical distribution is a Poisson distribution.

The Poisson distribution is a well-known statistical formula used to model the number of events for a specific time period. Willemain et al. discloses using various statistical models to forecast demand at temporal intervals in the future. Therefore, it would have been obvious oto one of ordinary skill in the art at the time of the invention to use the Poisson distribution as the statistical model in order to increase a user's ability to balance the stock on hand versus the cost for maintaining the stock by more accurately predicting the amount of demand (events) for a specific time period, a stated in column 4, lines 30-40.

18. As per claim 11, Willemain et al. teaches selecting the statistical models (See at least figures 5 and 6, column 1, lines 10-25 and 35-45, column 4, lines 15-17, 22-43, and 51-55, column 5, lines 10-20, column 6, lines 45-47, column 7, lines 1-3 and 12-15, column 8, lines 18-26, column 9, line 7, and column 11, lines 35-40, wherein one of the statistica; models is applied based upon the situation). However, Willemain et al. does not expressly disclose selecting a set of equations for λ.

It is well known that a parameter or equation is substituted for lambda when using a Poisson distribution. The claims provide for no specific equation or equations for lambda, just that a set of equations is selected. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to select a set of equations for lambda in order to more accurately model the demand-forecasting situation by providing the one parameter needed to complete the Poisson distribution.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Shipman (U.S. 5,819,232) teaches determining a demand forecast using historical data for weighting factors.

Ettl et al. (U.S. 5,946,662) discloses a supply chain with inventory levels and fill rates to meet service level requirements.

Huang et al. (U.S. 6,151,582) teaches management of a supply chain.

Fields et al. (U.S. 5,459,656) teaches predicting demand for components.

"Capacity Planning" (www.uoguelph.ca/~dsparlin/capacity.htm) discloses using a Poisson distribution with a lambda parameter to predict arrivals in capacity planning.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Beth Van Doren whose telephone number is (703) 305-3882. The examiner can normally be reached on M-F, 8:30-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tariq Hafiz can be reached on (703) 305-9643. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 305-7687 for regular communications and (703) 305-7687 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-1113.

bvd
May 28, 2003

TARIQ R. HAFIZ
SUPERVISORY PATENT EXAMINER
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